THE ADVOCATE OF SCIENCE.

KNOWLEDGE IS POWER--HAPPINESS--VIRTUE.

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GEOLOGY, No. 4.

In my preceding article, I named and defined the several classes of rocks, being six in number, as follows:—

I. *Primary*, or *Primitive*, supposed to be the oldest or first in the order of their formation.

II. *Transition*, or *Intermediate*, supposed to have been formed during the transition of the earth from an uninhabited to an inhabited state.

III. *Secondary*, formed subsequent to the creation of numerous animals and plants.

IV. *Tertiary*, more recent than the secondary, and existing along the borders of continents, where they were gradually deposited by the ocean.

V. *Diluvial and Alluvial*, formed by deluges and by rivers.

VI. *Volcanic and Basaltic*, the effect of volcanoes and igneous action.

General description of the Primary class.—The primary rocks contain no traces of animals or vegetables, nor any fragments of the other rocks: hence the belief that they were formed prior to the creation of life. They occur in immense masses and strata, constituting the deepest part of the earth's surface with which we are acquainted. They not only compose the foundation on which rocks of the other strata are laid, but in many situations they pierce through the incumbent rocks and strata, and form also, as before explained, the summits of the highest mountains.

Crystalline structure of the primary rocks.—These rocks are always more or less crystalline in their structure, showing that they were formed by *chemical*, and not mechanical agency; or that they were in a state of solution by fire or by water, previous to assuming a solid state. On the other hand, had their formation been mechanical, they would have been composed of particles cemented together, without any crystalline appearance. A familiar instance of the difference between a *crystalline* and a *mechanical* structure, is observed in marble and chalk, which are both composed of the same ingredients, crystallized in the marble, but adhering mechanically in the chalk.

Were the primary rocks formed by fire or by water?—This question involves a large amount of facts and arguments, of which more will be said hereafter. One class of geologists argues that they resulted directly from the refrigeration of the globe, which was once a mass of melted or inflamed materials. Another class supposes them originally deposited by the ocean, and subsequently crystallized by the action of a central fire burning beneath them. A third set of geologists, refers their formation immediately to the process of crystallization from an aqueous fluid, which once held their materials in solution; just as we observe alum or rock candy, crystallized from its solution in water. If any of my young readers choose, they may exercise themselves in deciding this important point, by applying the facts which have a bearing on the question, as I shall present them.

Extent of the primary strata.—That these rocks environ the whole globe does not admit of mathematical demonstration. But from their uniform appearance in mountainous districts in all parts of the world, we may infer with tolerable certainty that the primary strata, or some of them, compose the foundation rocks of every country; and that, when the surface is level, they repose at a considerable depth beneath, only presenting themselves to our view in places where they were protruded by the causes which operated in the formation of mountains.

Age of the primary strata.—I have said that the absence of all traces of animals and plants in these strata, has led to the conclusion that the primary rocks were formed prior to the creation of life—at a *day* when our planet was not in a condition to support the existence of a single animal or a single plant. True, we have no means of ascertaining positively that they have not, at some period, contained organic remains, which were destroyed by the same process to which the rock owes its present crystallized structure. We may infer, however, with sufficient certainty, that their formation preceded the formation of animal and vegetable life, because the strata next above them, and consequently next in succession above

exclusively the remains of the lowest orders of animals, which are considered as the first link in the great chain of created beings.

Granite, its situation, &c.—The most important of the primary rocks is called *granite*—a name given to it because its structure is often granular, or composed of grains. It lies deepest, or nearest the centre of the earth—no other rock having ever been discovered beneath it. As before observed of the primary rocks in general, it forms the summit and central portion of most mountains; and it is seldom to be seen except in such situations.

Composition of Granite.—Granite is composed of three distinct minerals, blended together in various proportions, viz.: *Quartz*, *Feldspar* and *Mica*.

Quartz described.—Quartz is one of the most abundant of mineral substances. It is very hard, so as to scratch glass, and to strike fire with steel. Everybody is well acquainted with some of the forms or varieties of quartz. When pure, it is composed almost entirely of a substance called *silex*. Flint, rock crystal, and white sand, consist almost purely of quartz or silex. In this form it is an essential article in the manufacture of glass. When tinged with iron and manganese, in various proportions, it constitutes many beautiful and valuable minerals. Amethyst, agate, carnelian, jasper, are composed of quartz, colored with iron or manganese. Its uses in the arts and domestic economy are almost innumerable. Glass could not be made without it; the buhr stone, which grinds our flour, owes its pulverizing power to quartz; the grindstone is formed of it; the mason employs it in his mortar; the stone cutter uses it in sawing his marble; the cook uses it in scouring her utensils; the housemaid in scrubbing the floor; sand paper is made of it; the sand which I sprinkle over my writing, to prevent its blotting, is chiefly quartz; the handsome crystals on the mantlepiece, the brilliant stone in your sister's breast-pin, and the beads in her bracelet or guard-chain, are most probably little more than quartz.

Feldspar described.—Feldspar is not so hard as quartz, though it produces a slight scratch when rubbed over glass. Its color is mostly reddish or white. It may always be easily detected by any body, on account of its peculiar manner of breaking. If I break a small lump of it into twenty, or a hundred pieces, every piece will show a tendency to assume a particular shape—that of a rhomb or lozenge. It is composed in part of silex, with the addition of alumine, (the base of clay,) and some potash. Feldspar is also a very useful mineral in the arts, being extensively employed in the manufacture of *porcelain;* of which it is the principal ingredient.

Mica described.—The third ingredient of granite is mica, often called isinglass. This is always separable into very thin layers, which are transparent and elastic; and it may be readily known from this circumstance. It is said a piece of mica one inch thick, is separable into 300,000 plates. Mica is composed, like feldspar, of silex, alumine and potash; but these ingredients are very differently combined, so as to produce a very different mineral. The uses of mica are not so numerous and important as those of quartz and feldspar. It is often employed, however, as a substitute for glass, being found in some countries in very large sheets. In ships of war it has been thus used for windows, not being liable to injury from the concussion of the cannon. It is also well adapted for confining on the slides of the solar microscope, insects and other objects, to be examined with that instrument.

One of the ingredients of granite often wanting.—The proportions of these three minerals, in the composition of granite, are subject to great variation. It often happens that one of them is entirely wanting, and the rock is then formed of the remaining two. Mica is most frequently deficient; but this deficiency improves the quality of the rock, for most of its useful applications. S.

For the Advocate of Science.

A Lecture on the History and Study of the Natural Sciences.

[CONTINUED FROM PAGE 11.]

TOWARDS the close of the middle ages, that long era of intellectual bondage, a few illustrious names are found on the page of history, and a few valuable discoveries are recorded, which, like the early twilight of the morning, foretold the bright day that was about to follow. The discovery of the mariner's compass in the 12th century, began an important era in navigation and commerce. In the 13th century lived Roger Bacon, a monk, the discoverer of gunpowder, and a successful cultivator of optics.

brought to great perfection shortly afterwards—the subjugation of Turkey and Greece by the Saracens, which led to the dispersion of men of letters, and the circulation of the stores of ancient learning throughout Europe—the reformation from popery—the emancipation from the yoke of Aristotle—are all important events in the annals of these times. But the cause of science was not much advanced before the appearance of Francis Bacon, in the latter part of the 16th century.

We have now crossed the great desert which occupies so large a space on the chart of human science, and reached the borders of a region characterized by an extraordinary degree of intellectual luxuriance and fruitfulness. The illustrious Bacon holds the very first place on the list of intellectual philosophers, whether of ancient or modern times. He was in the department of mental philosophy, what Luther was in that of religion, the first of reformers. The period when he commenced his career was favorable to the developement of genius, and calculated to stimulate to the utmost exertion, every faculty of the intellect of man. Lord Bacon appears to have adopted, in practice, the opinion of Luther, that it was impossible to reform either religion or philosophy, until the metaphysical theology of the schools was renounced, the authority of Aristotle subverted, and the scholastic systems utterly demolished. He it was, who broke the wand of that ancient magician, and liberated the human mind from the enchanting influence of his mystified dogmas. He it was who first effectually declared independence of mind, from the despotism of old and worthless theories, venerable only by their age, and powerful only through the voluntary weakness of their slavish advocates. His was that spirit, before whom all the cumbrous machinery and gorgeous array of scholastic lore, vanished like the baseless fabric of a dream.

The leading feature of the Baconian philosophy, was the developement and application of the grand principle of induction, which led to the establishment of experimental science. To construct a theory in any department of knowledge, without the sure foundation of fact, is, according to Bacon, to anticipate nature. In this unphilosophical manner was the great Kepler led to the conclusion, in the early period of his life, that the number of planets in the solar system must be six, because of some imaginary virtue of that number. And on the same principle did Huygens, a German astronomer, who discovered one of Saturn's satellites, assert that it was in vain to search for more than six moons in the planetary system. It was this blind anticipation of nature, through the imagined virtue of the philosopher's stone, that concentrated the labors of the Arabian alchemists upon that one sordid object, and stamped as useless every result of their experiments, which fell short of realizing their golden dreams. It was the same anticipation of nature, on which was founded the infallible creed of tyrannical despots, that brought Socrates to martyrdom, that immured the immortal Galileo in the gloomy dungeons of an inquisition, and that kindled the faggots of the cruel pile, for a host of worthies, who dared to call in question the doctrines that had flown from the oracle of the academic groves.

Since the revolution incited by the father of experimental philosophy, the sciences have been studied more in their respective departments, cleared from the load of metaphysical nonsense and speculative theology with which they had been burthened. In pursuing their modern history, it is not therefore necessary to extend our view so as to embrace the entire range of intellectual advancement. Leaving the other departments, I will now proceed to give a succinct view of the progress that has been made within the two last centuries, in the study of the three kingdoms of nature; and first, of the animal world.

It has already been observed, that Aristotle was the first person who considered animals in a systematized order of arrangement. In the century next succeeding the Christian era, lived the celebrated naturalist Pliny, who published a treatise on animals in twenty-seven volumes. But excepting Pliny, no naturalist of much consequence appeared, until after the revival of literature; and it was not until the time of Linnæus the Swede, about the middle of the last century, that a rigid system of classification was adopted. The system of the Swedish naturalist arranged animals in classes and orders of definite number, and divided the orders into genera, species and varieties, indefinite in their number. Linnæus was succeeded by Cuvier, who formed a system more abstruse, though certainly more definite. The Linnæan method, however, is retained by most zoologists of the present day; although that of Cuvier will, in all probability, ultimately supercede it.

There is one branch of science usually studied under the head of Geology, with which it is essentially connected, though it should properly be considered a branch of the animal department. I allude to *Palæology*, or the study of the fossil remains of a former world. These have long been observed by the curious, but were supposed by the celebrated Tournefort, and that within a century and a half, to be vegetating stones, which originated from a seed or germ, after the manner of plants. The naturalists of the last century paid no little attention to this subject, and dragged forth the unrecognized relics of various animals, from their fossil abodes. It has since been pursued with so much spirit and success, that the ascertained lost kinds of animals and plants, bid fair, in progress of time, to be almost as numerous as the living.

Turning to the vegetable kingdom, we find the first regular classification of plants made by Andrew Cesalpinus, so late as 1583. Although the celebrated Gesner had previously thrown out some hints relating to the subject, yet Cesalpinus justly deserves to be considered the father of systematic botany. His method was founded on the characters of the seed and fruit.

A century afterwards came John Ray, an Englishman, the son of a blacksmith. Ray was one of the greatest naturalists of his age, and founded a system by which plants were arranged according to their general resemblance to each other. Bœrhaave, Tournefort, Magnolius, whose name has been perpetuated by the splendid genus magnolia, with many other illustrious names, subsequently adorned the annals of Botany. But the Swedish sage, who occupies so conspicuous a place in the history of the animal department, at the same time stretched forth his hand to arrange in regular order the productions of vegetable life, and erected that system of classification which is now almost universally taught—a system that adorns with an amaranthine wreath, the brow of its illustrious author. Linnæus took for his guide the fructification, or the flower and fruit, and founded on the character of this part, his beautiful sexual method. Other systems have since been proposed, chiefly depending on the general features of resemblance between groups or families of plants. Some of these, that of Jussieu for instance, possess considerable merit.

The third grand division of nature comprises mineralogy proper, and geology. The former relates to the properties and composition of the various substances that are found on, or near, the earth's surface. The latter takes a general view of the nature and arrangement of the strata which constitute the exterior portion of the globe. In tracing the history of mineralogy, which, as well as its kindred science geology, is, strictly speaking, a science of recent origin, we again observe the hand of the great Linnæus, attempting to reduce to order and system, the productions of inanimate nature. But he succeeded not so well in this as in the other departments; and it was reserved for Hauy and Werner, towards the close of the last century, to propose the systems that are now in vogue. That of Hauy is founded entirely on the principle that every mineral has its peculiar form of crystallization; and requires a knowledge of the primitive crystalline form of each variety. The plan of Werner, now generally adopted, is based on the external characters, and the ulterior form of the crystals; and is both popular and practicable, being established on those qualities most obvious to the senses, and most easily retained by the memory.

With regard to geology, the first question that attracted much attention, was the cause which led to the present form and structure of our terraqueous globe. Burnet, the first of theorists, who published in the year 1680, supposed the exterior of the earth to have once been a smooth and fertile crust, and the axis of our mundane sphere to have been perpendicular to the plane of the ecliptic; so that in the days of our antediluvian forefathers, "one unbounded spring encircled all." In the course of time the superficial crust caved into the subjacent watery abyss, giving rise to the general deluge, and producing in the earth's axis that unfortunate obliquity, which causes our tormenting vicissitudes of heat and cold. Another theorist saw indubitable evidence that our planet had received a severe brush from the tail of a comet, which drowned it with vapors, ruffled up the mountainous asperities, and so cooled the soil that the present state of barrenness and exhaustion was the consequence. The celc-

brated Buffon argued, that 9600 years, and perhaps some odd months and days, before his time, a comet ran foul of the sun, and knocked off one six hundred and fiftieth part thereof. This huge mass burst into several pieces, which continued their whirling motion around the sun, constituting our present set of planets. One of these morsels became cool enough in 4300 years to support life at the poles. The production of vegetable and animal life now continued and increased on this mass, till finally a new race of beings sprouted up, who gave it a name. This was our earth. Buffon left it for others to calculate the time when the cooling process would reach such an extent as to consign his posterity to death by freezing. The irregularities of the earth's surface were ascribed by another theorist to an explosion of steam in the interior; and by another, the great chain of mountains stretching from pole to pole on the western continent, was attributed to the falling in of a ring like that of the planet saturn, with which our earth was once decorated. (*To be continued.*)

The Tea Plant.

[CONCLUDED FROM PAGE 11.]

There are three seasons at which the leaves of the plant are collected. The first commences the latter end of February, or the beginning of March. At that time the leaves are small, tender and unfolded, and not more than three or four days old. These are dried and pulverized, and it is then called *ficki-tsiaa*, or "tea in powder." It is occasionally called bloom tea, as also imperial tea, owing to its being reserved for people of rank. The laborers pull off these leaves one by one and are very careful not to break them; in this way they gather from four to fifteen pounds a day.

The second crop is gathered about the end of March, or the beginning of April. At this period part of the leaves have attained their full growth, while others are not more than half their size. They are gathered indiscriminately, however, and afterwards picked and assorted in different parcels, according to their size and age. The youngest of these are often sold for imperial tea.

The third crop is gathered at the end of May, or the beginning of June. By this time the leaves are very thick and numerous, and have arrived at their full growth. This kind of tea is the coarsest of all, and is reserved for the common people.

After the leaves are pulled they are taken into a drying house, a small building containing from ten to eighteen iron vessels, in which the tea is placed, a small quantity at a time. A fire being introduced under them, the workmen stir the leaves about with their hands till they become so hot that no one can manifest much pleasure in continuing the operation. They are then taken out, placed upon a table and rolled with the hands into the shape we see it. This operation is repeated two or three times so that they may be thoroughly dried; and they are cooled with a fan in order to make them retain their curl better.

In Japan there is a celebrated mountain called Udsi, the whole of which is occupied in the culture of tea for the European market. It is entirely surrounded with a ditch to keep out both men and beasts. So particular are the proprietors of these plantations, that when the leaves are gathered those who are employed are obliged to wear gloves and to bathe two or three times a day, lest the delicate flavor of the leaf should be injured in gathering.

Dr. Abel says the strongest tea he tasted while in China was called yutien, and was used on ceremonious occasions. It scarcely coloured the water, and on examination it proved to be a compound of buds and half expanded leaves. When Lord Macartney returned from his Chinese embassy, he brought with him some tea presented to him by the Emperor, made up in small balls and said to be of the finest quality; yet an infusion of this tea produced no flavor to an English taste; so that it would seem that the best tea prepared for the Chinese court is reduced in its astringency and odour by the mode of preparing it.

The Chinese pour boiling water over their tea and leave it to infuse as we do; but they drink it without any mixture, using not even sugar.

The first European writer who mentions tea is Giovanni Botero, an Italian author, who, in a treatise published about 1590, says, "the Chinese have an herb out of which they press a delicate juice which serves them for drink instead of wine." It was introduced into Europe by the Dutch East India Company in 1641, and was brought to England from Holland about the year 1666 by Lords Arlington and Ossery.

Green tea is generally divided into three kinds, and Bohea into five; the former are, the Imperial, Hyson, (from the merchant who first imported it,) and Singlo, (from the name of the place where it is cultivated;) the others are the Souchong, Camho, Congo, Pekoe, and common Bohea.

Much has been said, and perhaps truly, about the unwholesome properties of green tea, yet the injury which results from it must depend on the strength and quantity in which it is taken. Kæmpfer says he observed the leaves contained something narcotic, which occasions a disorder in the animal spirits, and makes those who drink it appear intoxicated. He once sitting alone in his room with a disorderly tea equipage on his table and his teapot standing on a trevit before the fire.

Dr. Johnson would sometimes drink more than 20 cups at a sitting; and he confesses he was "a hardened and shameless tea drinker—who for twenty years diluted his meals with only the infusion of this fascinating plant; whose kettle had scarcely time to cool; who with tea amused the evening; with tea solaced the midnight; and with tea welcomed the morning." Yet, according to this same enthusiastic admirer of it, its proper use is to amuse the idler, to relax the studious, and to dilute the full meals of those who cannot use exercise and will not use abstinence. He told Boswell he never felt the least inconvenience from the excess to which he drank it.

JOURNAL OF THE WEATHER,

for 2nd Month, Feb. 1833, kept at Wilmington, Del.

Days of week.	Days of Mo'th	THERMOM. Sunrise.	THERMOM. Mid-day.	BAROM'R. Mid-day.	WIND. Direction.	WIND. Force.	OBSERVATIONS.
6	1	19°	27°	29.80	N.W.	2	Cloudy, snow shower, clear.
7	2	16	29	.85	N.W.	2	Clear.
1	3	20	30	.84	N.W.	3	Clear—cloudy.
2	4	22	32	.93	N.W.	2	Clear.
3	5	24	40	.85	S.W.	1	Clear—cloudy.
4	6	34	42	.54	N.W.	4	Cloudy—clear.
5	7	19	28	.72	N.W.	4	Clear.
6	8	19	34	.99	S.W.	2	Clear—cloudy.
7	9	30	50	.73	W.-N.	2	Clear.
1	10	36	56	.72	S.W.	0	Clear.
2	11	38	34	.95	N.E.	2	Cloudy. 30 in. sleet & hail.
3	12	34	40	.60	N.E.	2	Cloudy, .05 in. rain.
4	13	35	38	.40	N.E.	2	.40 in. rain—clear.
5	14	30	38	.86	N.W.	1	Cloudy—clear.
6	15	28	32	.90	N.E.	3	5 inches snow.
7	16	22	42	30.03	N.	0	Clear.
1	17	31	45	29.77	S.W.	1	Clear—cloudy.
2	18	38	52	.40	N.W-S.W.	2	Cloudy.
3	19	44	46	.49	E.-S.	1	25 in rain—foggy.
4	20	38	54	.60	S.W-N.W.	2	Cloudy.
5	21	26	40	.95	N.W.	2	Cloudy—clear.
6	22	26	46	.85	S.W.	3	Clear.
7	23	31	56	.75	W.-N.E.	1	Clear, and beautiful.
1	24	37	56	.35	S.W-N.W.	1-5	Cly. clr. r. 10 in. snow ¼ in
2	25	18	29	.87	N.W.	4	Clear, cloudy, snow ¼ in.
3	26	18	45	.88	S.W.	3	Clear.
4	27	37	53	.60	W.-N.W.	4	Clear.
5	28	27	24	.70	E.	2	Snow 5 inches.

SUMMARY.

Average at sunrise, thermometer 28°.18—barometer 29.79 inches,

Do.	at mid-day,	do.	40°.61	do.	29.75 do.
Do.	at 11 P.M.	do.	30°.81	do.	29.76 do.
Mean, two observations,		do.	34°.359	do.	29.77 do.
Maximum, (10th, 23rd and 24th)			56°	do. 10th	30.05 do.
Minimum, (2nd)		do.	16°	do. 24th	29.35 do.
Range,		do.	40°	do.	.70 do.
Warmest day, 24th,		do.	46½°		
Coldest day, 2nd,		do.	22½°		

Northerly Winds prevailed, (proportion,)	12 days	Whole days clear,	10 days
Easterly, do.	6 do.	Days on which rain fell.	5
Southerly, do.	10 do.	Days on which snow fell,	3
Proportion of clear weather,	16 do.	Quantity of rain,	1.10 inch.
Proportion of cloudy do.	12 do.	Quantity of snow,	10¼ in.
		Quantity of water,	2.33 in.

No auroras, nor electrified clouds. Six easterly storms, two of them attended with snow, two with rain, and two transient and incomplete.

Explanatory remarks.—In that column of the above table, which represents the comparative force of the wind, 0 stands for calm or nearly calm, 1, for a light breeze, 2 a breeze, 3 a wind, 4 a high wind, 5 a very high wind.

The summary is derived from data more extensive than the table which precedes it. The original table consists of three daily observations of the instruments, wind and weather. All these observations are taken into account in ascertaining the proportion of clear weather &c. It often happens that considerable clear weather occurs during a month in which there are few whole days clear. Thus November and December 1832, had each the same

and the other month 13. Hence, the ordinary mode of estimating the amount of clear weather by the number of clear days, is very uncertain, and often fallacious.

In giving the number of days on which rain and snow fell, no notice is taken of such rains and snows as are too scanty to admit of measurement.

MISCELLANIES.

1. *Attachment of savages to their native habits &c.*—There are numerous instances in history illustrating the disposition felt by savages who have been partially civilized, to resume their original mode of life. In one of the numbers of the Library of Ent. Knowledge, on the New Zealanders, an account is given of a New Zealand Chief, thus situated, named Tooi, who was brought to England about 15 years ago, and introduced to the customs and arts of civilization. While learning to read, he wrote to a friend complaining that it was a hard task —that he could do any thing with his fingers, but that his head in the morning went *all away*. In giving an account of the wonders he had seen, he writes: "I saw with mine own eyes the iron run like water; my countrymen no believe suppose I tell him. I see great elephant, and great many great beasts and guns at the Tower. I like up country very much—better than my own country. Tooi no like London—shove me about." This chief, shortly afterwards returned to New Zealand. On the passage, he manifested a disposition to relapse into his former habits. One morning he made his appearance on board the vessel, equipped in a blue coat, trowsers and boots, and wearing a cocked hat with a long white feather. His conversation was a continued boast of the atrocities he had previously committed; and he dwelt with marked pleasure on an instance of his generalship, when having forced a small party of his enemies into a narrow place, whence their was no egress, he was enabled successively to shoot two and twenty of them. To qualify this story, and to indicate the refinement of character which he had derived from his intercourse with Christians, he remarked, that though all the dead bodies were devoured by the tribe, neither he nor his brother ate human flesh, nor did they fight on sundays. When asked why he did not try to turn the minds of his people to agriculture, he said it was impossible; that if you told a New Zealander to work, he fell asleep; but if you spoke of fighting, he opened his eyes as wide as a tea-cup.

2. *Diminution of animal heat in sleep.*—During sleep, or during the hours in which sleep usually takes place, the temperature of the body falls one degree, according to Magendie. The cause of this decrease of heat is to be sought in the languid state of the body at the time, all the vital actions being carried on more feebly, owing to the abstraction of exciting agents, and the exhaustion consequent on the exercise of the day.

3. *Mode of ascertaining the heat of the blood.*—The temperature of the blood, which is the same as that of the internal parts of the body, is ascertained by placing the bulb of a thermometer under the tongue, or in the arm pit; where it will rise to 98°or 99°. The parts of the body exposed to the action of the air are commonly much colder; owing in part to the evaporation of sweat, which produces cold, and in part to the conducting power of the atmosphere.

4. *A philosopher killed with an oyster.*—Birds have been seen to fly to some height in the air with muscles and other shell fish, and then drop them on the rocks so as to get the animal for food. The crow family are particularly sagacious in this respect. Darwin tells of a philosopher who was once walking on the sea shore, when a bird mistook his bald pate for a stone and let fall on it a huge oyster, to the death both of oyster and man. This story is very improbable, though the fact previously narrated is well established.

4. *Effect of over distention of the stomach.*—A woman once devoured an enormous quantity of animal food for a wager, but she never afterwards felt satisfied with food, although she ate twice as much as before.—*Darwin.*

Reason for fixing on the zero point of the thermometer.—When Fahrenheit fixed on the graduation of his thermometer, the greatest degree of cold then known was produced by a mixture of salt and snow. Fahrenheit supposed therefore, that when the bulb of his instrument was immersed in this mixture, the heat, or caloric was entirely abstracted from the mercury! The point 0 or zero, was thus established. Since that time, freezing mixtures have been discovered reducing the thermometer to 100 degrees or more below this point; and captain Parry actually found the temperature of the air in Melville island, on one day during his wintering on that Island, so low as 55° or 60° below 0°.

For the Advocate of Science.

The Editor of the Advocate of Science will oblige one of his young readers by answering the following questions, touching the subject of meteorology.

1. What is the cause of the circle around the moon, or sun, which we often see when the sky is thinly clouded over?

2. Why does a north-west wind make ice, when the atmosphere is several degrees above the freezing point, while an easterly wind thaws even when it is colder?

3. In what way does a fall of snow act in producing extreme cold?

Barbara.

Mr. Advocate.—When I read your prospectus, criticising, in general terms, some of the popular periodicals of the present day, I expected you to follow up the allusion by stating specific cases, and making specific charges. Being fond of witnessing squabbles among editors, I confess myself a little disappointed at not seeing in your paper some compliment to the "Ladies Book," "Waldie's Circulating Library," "The Novelists' Magazine," &c. &c. Judging from the prospectus aforesaid, I suppose that you entertain *decided* opinions respecting these and similar works. If so, I, for one, would like to hear them.

Yours, &c. Q. X.

Our worthy correspondent Q. X., whose taste in selecting his signature we do not admire, has anticipated our design. We entertain the prospect of expressing very soon what are our "decided opinions" respecting a large number of works which issue from the American press. Whether we shall have the field to ourselves, or whether our friend will be gratified with the sight of some *squabbles*, is not very material to us. We only wish the task of reviewing rigidly and rationally the mass of popular works to which he refers, could be in the hands of more able critics. Truly the press needs purifying, when the lives of robbers and banditti are dragged from their deserved obscurity, to pamper a depraved taste—when a publisher only inquires if his book will sell, and an author is only ambitious to gain a shortlived notoriety, which future ages *may* regard as disreputable. But more of this anon.

To our Readers and Correspondents.

The irregularity which has occurred in the time of issuing our paper, has been unavoidable, but we shall henceforth be punctilious on this point. For our own greater convenience, seconded by the suggestions of many of our subscribers, the "Advocate of Science" will be issued in future but once in two weeks; but double its present size: thus throwing two numbers into one. From our country friends and others, we solicit the transmission of any interesting and well substantiated facts in Natural History, which may have come to their knowledge: since we are desirous of embodying in our paper every circumstance we possibly can, which will afford illustrations of scientific subjects.

The questions put to us by our fair correspondent Barbara, are very rational ones, and exhibit an inquiring disposition which deserves to be fostered. We shall reply to them in the next number; or, perhaps some of our readers can save us the trouble by furnishing us with the requisite explanations. We will gladly give any information in our power to such inquiries, and are desirous to encourage the practice which "Barbara" has thus instigated. It affords better employment than connundrums, rebusses and riddles.